

Remarks

Upon entry of this amendment, claims 46, 47, 49, 50, 52–54, 56, and 57 will be pending. By this amendment, claims 46, 47, 52, and 53 have been amended; claims 48, 51, and 55 have been canceled; and claims 56 and 57 have been added. No new matter has been added.

Applicant respectfully requests entry of the amendment and reconsideration of the pending claims in view of the above amendment and the following remarks.

§ 103 Rejection of Claims 46, 47, 49, 54, and 55

On page 2 of the Office Action of December 13, 2006 (hereinafter referred to as “the Office Action”), claims 46, 47, 49, 54, and 55 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gong et al. (U.S. Patent No. 6,683,737; hereinafter referred to as “Gong”) in view of Gill et al. (U.S. Patent No. 6,469,854; hereinafter referred to as “Gill”).

In the Background section of the Specification, it is stated that “to permit the head from the drive to access the [rotatable hard disk] within the cartridge, the cartridge is not provided with a sealed enclosure.... Instead, the cartridge is provided with an opening through which the head of the drive can be inserted into the cartridge. In some cases, a movable shutter is provided to obstruct the opening when the cartridge is not disposed in the drive. However, when the cartridge is disposed in the drive, the shutter moves to an open position. Thus, regardless of whether or not a shutter is present, when the cartridge is in the drive, there is an opening which gives the head access to the interior of the cartridge. That opening also necessarily gives ambient air access to the interior of the cartridge, along with any dust, smoke, vapor or other contaminants that are carried by the ambient air.” *Specification, page 3, line 21 to page 4, line 4.*

Further, “[i]n order to reduce the incidence of errors, pre-existing systems of this type have typically taken the approach of using a relatively low density for the data stored on the magnetic disk. While this approach has been generally adequate for its intended purposes, it has not been completely satisfactory in all respects. In particular, and as discussed above, there is a progressively increasing demand for progressively higher storage capacities in devices of this type. To achieve this, there is a need to use higher data storage densities, which in turn presents an increased likelihood of errors in data stored on and retrieved from the magnetic disk.” *Specification, page 4, lines 5–17.*

To address the problem stated above, embodiments of the present invention provide methods to “[monitor] a characteristic of information read by the structure from the storage medium, including determining whether the characteristic satisfies a predetermined criteria; and responding to a determination that the characteristic fails to satisfy the predetermined criteria by carrying out a course of action which includes a selected action that reduces the likelihood of non-recoverable errors in data read by the structure from the storage medium.” *Specification, page 5, lines 10–18.*

For example, claim 46, as amended herein, provides a method of operating an information storage system, the method comprising:

- positioning a read head to a first position over a loading track;

- comparing a value of a first evaluation parameter to a first predetermined level;

- when the first evaluation parameter exceeds the first predetermined level, moving the read head to a cleaning position and then back to the first position;

- when the value of the first evaluation parameter does not exceed the first predetermined level, positioning the read head to a second position over a reserved track, and comparing a

value of a second evaluation parameter to a second predetermined level; and

when the value of the second evaluation parameter exceeds the second predetermined level, moving the read head to a park position and generating an error signal.

(emphasis added)

Accordingly, in one aspect of the present invention, the read head is moved to a first position over a loading track, where a first parameter is evaluated; when the first evaluation parameter does not exceed a predetermined level, the read head is positioned to a second position over a reserved track, where a second parameter is evaluated. Further, when the second parameter exceeds a predetermined level, then the read head is moved to a park position, and an error signal is generated.

A dedicated track for loading and unloading a read head on a magnetic disk is disclosed. As stated in the Specification, “[t]he magnetic coating on the disk 21 has a radially outer portion 26, which is a circular loading/unloading track. This track 26 is not used for operational data storage, but has servo information of a known type stored along it.” *Specification, page 8, lines 25–29* (emphasis added). Further, “[w]hen the cartridge 14 has been fully inserted, the actuator 56 can move the arm 57 counterclockwise in FIG. 1, so that the tab 63 leaves the detent 76 and slides down the portion of the ramp 72 which is to the left of the detent 76, until the head 62 is adjacent the magnetic coating on the surface of the disk 21. As the head 62 nears the disk 21, the head 62 will be aligned with the loading/unloading track 26.” *Specification, page 10, lines 18–25* (emphasis added). That is, when a magnetic disk cartridge is inserted, the head is positioned over a specialized, dedicated loading track containing no user data.

Regarding a reserved track, the Specification states, “[n]ear the spindle 22, the radially inner portion of the magnetic coating has a further circular portion 28, which is referred to as a reserved

track or debug track. The track 28 is not used to store operational user data, but has servo information stored along it.” *Specification, page 8, line 30 to page 9, line 2* (emphasis added). Also, “[r]eferring now in more detail to block 161, the control circuit 110 of the drive 12 carries out a further operation which is intended to compensate for airborne contaminants.” *Specification, page 17, lines 29–32*. “More specifically, with reference to block 161 in FIG. 2, the control circuit 110 causes the actuator 56 to move the arm 57 until the head 62 is aligned with the reserved track 28 at the radially inner portion of the disk 21.” *Specification, page 18, lines 28–32* (emphasis added). The reserved track is therefore a specialized track for testing and maintenance on which no user data are stored. Thus, loading and reserved tracks are specifically identified as dedicated regions on a magnetic disk at which respective first and second parameters are evaluated.

The Office Action states that “Gong et al. does not explicitly teach wherein the head is cleaned if the error exceeds the predetermined level and changing to another position if the first position did not surpass the predetermined level. This limitation is taught by Gill et al., wherein it teaches cleaning the head if errors are detected in Col. 5, L. 32-35, 39-46 and Col. 6, L. 14-16 (Wherein Gill et al. teaches that if no error is detected, the method may end or if more blocks need to be written evaluated, it repeats the process of reading the track for errors in another track.)” *Office Action, page 2, lines 18–23*. However, Gill states specifically that “[i]f no error is detected, device block 70 has been successfully written, and the method ends. If any additional data blocks 70 remain to be written, the method may be repeated.” *Gill, Col. 5, lines 32–35* (emphasis added). Thus, Gill discloses that after no error is detected in one test, that a subsequent test *may* be performed *if any additional data blocks* remain to be written. However, Gill does not disclose that when the value of the first evaluation parameter does not exceed the first predetermined level, the read head is moved to a second position over a reserved track, where a value of a second evaluation

parameter compared to a second predetermined level. That is, Gill discloses an optional step to be carried out at an arbitrary (i.e., “any additional”) data block on a magnetic tape, not a specific repositioning of the head on a magnetic disk to a specialized, reserved track, the reserved track having no user data. Since Gong and Gill fail to teach or suggest positioning the read head to a second position over a reserved track when the evaluation parameter does not exceed a first predetermined level, Gong and Gill, individually or in combination, therefore fail to teach or suggest all of the limitations of claim 46 as amended herein.

Claim 46 has been amended to substantially include the subject matter of claim 48. On page 4 of the Office Action, Anderson et al. (U.S. Patent No. 6,215,618; hereinafter referred to as “Anderson”) is cited in regard to claim 48. Since the subject matter of claim 48 is substantially included in claim 46, the reference to Anderson will also be addressed in the current section addressing claim 46.

With regard to claim 48, the Office Action states “the combination of Gong et al. and Gill et al. teach all the limitations of Claim 46. However, the combination does not explicitly teach wherein the first position is on a loading track. This is taught by Anderson et al. in Col. 3, L. 61-64 and Col. 5, L. 36-66.” *Office Action, page 4, lines 4–7.*

Applicant respectfully disagrees with this interpretation of “loading track.” Referring specifically to Anderson, Anderson discloses “loading” a cleaning tape cartridge into the tape drive, and “loading therein” so as to position data tape 22 for linear movement along a magnetic tape head 26. *See Anderson, Col. 3, lines 61–62, and Col. 5, lines 38–40.* Thus, Anderson discloses loading a tape cartridge into a tape drive, but does not disclose the use of a specified loading track as described for a magnetic disk. Anderson further states that “servo elements on the tape head are configured for reading servo information from a portion of tape 22.” *Anderson, Col. 5, lines 46–49* 9 (emphasis

added). Applicant respectfully disagrees that “a portion of tape” can be construed as a loading track, simply because servo information in this context must always and necessarily be read from some “portion of tape.” Anderson thus does not disclose a specialized, dedicated loading track, but by contrast only a general “portion of tape.” Since Gong, Gill, and Anderson fail to teach or suggest positioning a read head to a first position over a loading track, Gong, Gill, and Anderson, individually or in combination, fail to teach or suggest all of the limitations of claim 46 as amended herein.

Based on the foregoing discussion of Gong, Gill, and Anderson regarding claim 46, claim 46 should be allowable over Gong, Gill, and Anderson. Further, since claims 47, 49, and 54 depend from claim 46, claims 47, 49, and 54 should also be allowable over Gong, Gill, and Anderson.

It is therefore maintained that claims 46, 47, 49 and 54 should be allowable over the combination of Gong and Gill, and Anderson, as discussed above. Claim 55 has been canceled by this amendment. Accordingly, it is submitted that the rejection of claims 46, 47, 49, 54 and 55 based upon 35 U.S.C. §103(a) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

§ 103 Rejection of Claims 48 and 50–53

On page 4 of the Office Action, claims 48 and 50–53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gong and Gill as applied to claim 46, and further in view of Anderson.

Based on the foregoing discussion of Gong and Gill regarding claim 46, and since claims 50, 52, and 53 depend from claim 46, claims 50, 52, and 53 should also be allowable over Gong and Gill.

Claim 48 has been canceled by this amendment, and its subject matter substantially included in amended claim 46. Please refer to the discussion above in reference to claim 46.

Regarding claim 50, Anderson is cited for disclosing “wherein the evaluation parameter is a flyheight.” *Office Action, page 3, lines 20–21*. Even if Anderson discloses an evaluation parameter as a fly height, Anderson fails to teach or suggest positioning the read head to a second position over a reserved track when the evaluation parameter does not exceed the predetermined level, as discussed in the foregoing in reference to independent claim 46. Moreover, since claim 46 should be allowable over Gong, Gill, and Anderson as discussed above, and claim 50 depends from claim 46, claim 50 should therefore be allowable over Gong, Gill, and Anderson.

Regarding claim 52, Anderson is cited for disclosing “moving the head for normal operation when the second operation does not exceed the predetermined level.” *Office Action, page 4, lines 10–11*. Even if Anderson discloses moving a head for normal operation, Anderson fails to teach or suggest positioning the read head to a second position over a reserved track when the evaluation parameter does not exceed the predetermined level, as discussed in the foregoing in reference to independent claim 46. Moreover, since claim 46 should be allowable over Gong, Gill, and Anderson as discussed above, and amended claim 52 depends from claim 46, claim 52 should therefore be allowable over Gong, Gill, and Anderson.

Regarding claim 53, Anderson is cited for disclosing “wherein the second evaluation is a soft error rate.” *Office Action, page 4, lines 10–11*. Even if Anderson discloses a second evaluation as a soft error rate, Anderson fails to teach or suggest positioning the read head to a second position over a reserved track when the evaluation parameter does not exceed the predetermined level, as discussed in the foregoing in reference to independent claim 46. Moreover, since claim 46 should be

allowable over Gong, Gill, and Anderson as discussed above, and amended claim 53 depends from claim 46, claim 53 should therefore be allowable over Gong, Gill, and Anderson.

It is therefore maintained that claims 50, 52, and 53 should be allowable over the combination of Gong, Gill and Anderson. Claims 48 and 51 have been canceled by this amendment. Accordingly, it is submitted that the rejection of claims 48 and 50–53 based upon 35 U.S.C. §103(a) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

New Claims 56–57

New independent claims 56–57 have been added for further clarification of methods according to embodiments of the present invention. No new matter has been added.

Conclusion

In view of the foregoing, entry of this amendment and the allowance of this application with claims 46, 47, 49, 50, 52–54, 56, and 57 are respectfully solicited.

In the event that additional cooperation in this case may be helpful to complete its prosecution, the Examiner is cordially invited to contact Applicants' representative at the telephone number written below.

The Commissioner is hereby authorized to charge any insufficient fees or credit any overpayment associated with the above-identified application to Deposit Account **50-2075**.

Respectfully submitted,
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